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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,815	10/12/2001	Yoshitaka Sasaki	110773	8259
25944	7590	04/21/2004	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			TUGBANG, ANTHONY D	
			ART UNIT	PAPER NUMBER
			3729	
DATE MAILED: 04/21/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/974,815

Applicant(s)

SASAKI, YOSHITAKA

Examiner

A. Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 2-6 are objected to because of the following informalities. The claim language is awkwardly worded the examiner suggests the following changes.

In Claim 2, the term “a” (line 3) should be replaced with –the predetermined--. Similar changes should be made to Claim 3.

In Claim 4, the term “an” (line 2) should be replaced with the term –the--.

In Claim 5, the term “an” (1<sup>st</sup> occurrence at line 2 and 2<sup>nd</sup> occurrence at line 4) should each be replaced with the term –the--.

In Claim 6, the term “a” (line 2) should be replaced with –the--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, the phrase of “at least chlorine out of a group of chlorine and boron trichloride” (lines 26-27) is confusing and awkwardly worded, rendering the claim as being vague and indefinite. The phrase is unclear if only the gas of “chlorine” is required, which is

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redundant since it is recited twice on the same line, or whether the combination of both “chlorine” and “boron trichloride” are required.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 4, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Miyauchi et al 6,047,462, Japanese Patent Publication JP 62-285406, referred to hereinafter as JP'406, and Harshbarger et al 4,208,241.

Regarding Claim(s) 1, Miyauchi discloses a method of manufacturing a thin film magnetic head comprising: forming a first magnetic layer 312 (in Fig. 12) on a substrate (base insulating film 120) through sputtering by using a ferromagnetic magnetic material (see col. 9, lines 57-59); forming a gap layer 340 on the first magnetic layer; selectively forming at least a uniform width portion (width of magnetic layer 322 in Fig. 13) in a magnetic second magnetic layer (either one of layers 321 or 322) on the gap layer by using a predetermined magnetic material, the uniform width portion extending so as to cross over a position (Air Bearing Surface shown in Fig. 5) in which the recording medium facing surface is to be formed; selectively removing the gap layer 340 in a region other than a portion corresponding to the uniform width portion; and selectively removing the first magnetic layer 312 in a region other than a portion corresponding to the uniform width portion to a predetermined depth, through reactive ion

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etching with the uniform width portion as a mask, in an atmosphere of a gas (see sequence of Figs. 13 to 14).

Miyauchi teaches substantially all of the limitations of the claimed manufacturing method except that: 1) the magnetic material of the first magnetic layer is iron nitride; and 2) that the reactive ion etching occurs in an atmosphere of gas of chlorine in an ambient temperature within a range of 30-300°C.

JP'406 teaches that forming magnetic layers by sputtering to form a magnetic head with the composition of iron nitride, in general, enables control of the magnetostriction of the magnetic head (see Constitution and Purpose).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Miyauchi by sputtering the first magnetic layer with the composition of iron nitride, as taught by JP'406, to positively control the magnetostriction of the magnetic head.

Harshbarger teaches that magnetic device fabrication with reactive ion etching (see col. 3, lines 37+) utilizing the gas of chlorine (see col. 4, lines 65+) within a temperature range of 25-250°C, allows flexibility in desired etch profiles in the magnetic device (see col. 1, lines 35+). It is noted that the temperature range of Harshbarger satisfies the claimed temperature range of Claim 4.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Miyauchi by reactive ion etching with the gas composition and temperature range of Harshbarger, to advantageously allow flexibility in desired etch profiles in manufacturing the magnetic head.

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6. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art as applied to claim 1 above, and further in view of Chen et al 6,591,480.

Miyauchi, as modified by the prior art above, discloses the claimed manufacturing method further including sputtering and an etching process, i.e. reactive ion etching. The modified Miyauchi method does not teach that the uniform width portion is formed through a plating process by using a predetermined magnetic material of iron, nickel and cobalt (as required by Claim 2); or that the uniform width portion is formed by using a cobalt iron alloy (as required by Claim 3).

Chen suggests that magnetic layers that are patterned by plating, can have the composition of iron, nickel and cobalt (CoNiFe, at col. 3, lines 62+), which is also a cobalt iron alloy, to allow various designs in flux concentration and data rate application (see col. 4, lines 56+).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have altered to the modified Miyauchi method by forming the second magnetic layer by an alternative patterning process of plating and with the use of the predetermined magnetic materials taught by Chen, to positively allow various designs in flux concentration and data rate application in manufacturing the magnetic head.

***Allowable Subject Matter***

7. Claims 5 and 6 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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8. The following is a statement of reasons for the indication of allowable subject matter in at least dependent Claim 5. The prior art reference directed to Iida et al (U. S. Patent 4,267,013) does teach reactive ion etching magnetic devices in a gas atmosphere of boron trichloride (see col. 1, lines 40-45). However, neither Iida et al nor the prior art above, specifically teach etching the gap layer in a gas atmosphere of both chlorine and boron trichloride and etching the first magnetic layer in an atmosphere of gas of just chlorine, as required by Claim 5.

### *Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 703-308-7599. The examiner can normally be reached on Monday - Friday 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, appearing to read 'A. Dexter Tugbang', with a long, sweeping horizontal line extending to the right.

**A. Dexter Tugbang**  
**Primary Examiner**  
**Art Unit 3729**

April 19, 2004